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Abstract

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Grant Number: 1K01NR007649-01
PI Name: THOMAS, KAREN A.
PI Title: ASSOCIATE PROFESSOR
Project Title: MATERNAL ENTRAINMENT OF INFANT CIRCADIAN RHYTHM

Abstract: *DESCRIPTION: (provided by applicant) The candidate's long-term goal is to develop interventions that assist parents in shaping their young infants' sleep-wake patterns. The immediate goal is to expand current research involving infant biorhythm into a program of research that includes the simultaneous study of both maternal and infant circadian rhythms and maternal entrainment of the infant's developing rhythm. To achieve these goals, a focused research career development plan is proposed, including intensive study of (1) melatonin in relation to sleep-wake pattern, (2) adult circadian rhythms, and (3) advanced statistics for the study of biorhythms. Infant sleep problems are the primary concern of new parents. Establishment of a 24-hour, day-night pattern is a critical infant milestone that promotes sleep and facilitates family functioning. The importance of maternal entrainment of infants has been established in animal research; however, few studies have examined the role of maternal entrainment in human infants. The circadian rhythms of sleep-wake, temperature, and melatonin are intricately related. The purpose of the proposed research is to explore the relations between maternal and infant circadian rhythms during early infant life. Specific aims include characterizing the mesor, amplitude and acrophase of maternal and infant temperature circadian rhythms, and determining maternal and infant sleep-wake as well as maternal urinary melatonin patterns. Additionally, the phase relationships between mother and infant rhythms will be examined. Forty mother-infant pairs will be studied over a 24-hour period using an intensive within-subject design. Mothers will be 18-40 years of age and have no current illness or major health problems. Infants will be term gestation, 3-10 weeks postnatal age, singleton birth, with no major health problems or current illness. Maternal rectal temperature and infant insulated abdominal skin and axillary temperature will be recorded at one-minute*

intervals using battery operated monitors. Maternal and infant sleep-wake states will be entered in 15-minute epochs on a sleep-wake record by the mother. Maternal urinary 6-sulfatoxymelatonin will be assayed from samples of each maternal voiding. Cosinor analysis will be used to ascertain cycle parameters. The phase angle separating maternal and infant acrophase will be examined using circular-circular correlation.

Thesaurus Terms:
body temperature, circadian rhythm, maternal behavior, melatonin, mother child interaction, neuropsychology, newborn human (0-6 weeks), sleep
body temperature regulation, developmental psychology, hormone regulation /control mechanism, mother /infant health care, sleep deprivation, training, wakefulness
adult human (19+), behavioral /social science research tag, clinical research, female, human subject, patient monitoring device, personal log /diary, statistics /biometry, urinalysis, women's health

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Fiscal Year: 2001
Department: FAMILY AND CHILD NURSING
Project Start: 01-MAY-2001
Project End: 30-APR-2004
ICD: NATIONAL INSTITUTE OF NURSING RESEARCH
IRG: ZNR1